

THE HISTORY AND ETIOLOGY  
OF "MIGRAINE."

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The word *migraine* (*megrim*, *the megrims*, etc.) is the vulgarization of a misnaming and meaningless term for a malobserved and trivial symptom, which in the majority of cases is not present, of a widely prevalent and ingravescent disease, with indescribable symptoms, which wrecks life and morbidizes the mind, the etiology and pathology of which are unknown, the location or organs affected being also unknown, and of which no treatment avails.

The term is a corruption of the Greek *ἡμικρανία* and the Latin, *Hemicranion* or *Hemicrania*, taken to mean a pain in one side of the head. The word is, of course, an absurdity, because it denotes not pain, but only half-headedness, the idea of pain having no part in the construction of the word. One may perhaps speculate in vain as to the reasons of the Greeks for making half-headedness a synonym of pain in or on one side of the head. The fact itself seems to imply that when the word was born there must have been many patients who were so greatly tormented with this unilateral pain of the head that it was at once understood when such a patient was spoken of as "half-header"—"the man (or, more probably, woman) with half a head." The term was used in this way by Hippocrates, Galen and other Greek physicians with the same indiscrimination to express all headache, until Alexander Trallianus in the sixth century recognized that there were two forms of headache, and he urged that *hemicrania* or *migraine* was that which resulted from gastric disease or suffering.

In the seventeenth century the kinds of headache began to multiply, and they have continued to do so until now they are almost innumerable. The more cool-headed, at least not half-headed, English of one or two hundred years ago, began to recognize that "half-head" did not imply pain, and that pains in the head were by no means one-sided. Migraine, they saw, was not etymologically a pain, and the pain that existed in patients was not migrainous. Thence began the use of the good old English word *head-ach*. In his excellent dictionary published in 1809, Parr refers migraine or megrim to *cephalalgia*, and treats of the whole subject of headache, migrainous or not, under this heading. It was a sensible thing to do. It followed that the headache accompanied by gastric disorder, nausea, vomiting, indigestion, etc., naturally and rightly received the name *sickhead-ach*, or as we now say, *sickheadache*. With so-called "scientific" medicine (which in so far as pertains to this disease is absolutely as unscientific as was that of classic or mediæval times), there was a relapse to the absurd term migraine, and under that caption are now published hundreds of erudite monographs that throw little or no light of knowledge on the ludicrous tangle. The word is now applied to a symptom-complex of infinite variability to indicate a very common and violent disease, the cause of which is wholly unknown, and for which there is no cure.

The old term, "sun-pain," applied to the disease is of illuminative significance. It was so called because it lasted, in the olden times when the theory was formed, only so long as the sun shone, and ceased with darkness. Now, in those times all reading and writing was done by daylight; at night, the absence of artificial lights compelled cessation of literary, sewing, and handicraft occupations. With this ocular rest, as always, came immediate relief of the ocular reflexes called "head-ach" and "megrim."

*In Literature and in History*, the disease itself has played a tremendous rôle, and it is not surprising that writers should have busied themselves with it. To attempt any eulling or epitome of the literary allusions to headache would fill volumes. There is hardly an observant author who does not give intimations of the fact that must have been either before his eyes, or in them, or behind them, almost every day in his life. For as a

source of pain and suffering, as a molder or destroyer of literature, as well as of lives, headache has been, I doubt not, one of the greatest producers of evil. In any city, village or community of the civilized world, if one will ask any woman, and every second man, he will be told that all know of relatives, friends, and even whole families, constantly suffering from headache, sickheadache and other eyestrain affections. Willis, an ancient writer, already said of this affection:

There is none but is sometimes obnoxious, so that it has become a proverb as a sign of a most rare and admirable thing "that his head did never ake."

Other diseases, the plagues, poxes and punishments of evil and unsanitary living, came and went, but headache always remained with men and women, at least since civilization came to them.

An old English chronicler speaks of one:

"A fervent mygreyn was in the right syde of hurr hedde."

Other references are:

"Heyera hermetis purgeth the hemicran."—*Lloyd, Treas. Health*, 1585.

"Oyle of fystikes healeth the hemicrane and watchynges."—*Do.*

"Here hence springs the head-ache . . . which last we call the Hemicrany or Megrim, possessing but the one side of the head."—*Vaughan*, 1600.

"The bones help the Hemicrania."—*Lovell*, 1661.

"Subject to the sickness called Megrim or Hemicrain."—*Blount*, 1656.

The opinion of the writer in that monument of French erudition—*Larousse's "Grand Dictionnaire Universel"*—is plainly implied in the opening sentence of the article on *Migraine*: "The disease which physicians have baptised with the fine name of Hemicrania, without, for all that, feeling themselves under any obligation to cure it." "The shame of medicine," the writer calls it, later.

Méry says that *Migraine* is "a wonderful invention which will last untill there are no more women."

Samuel Johnson quotes *Bacon's Natural History*, which says that "in every megrim or vertigo there is an obtenebration joined with a semblance of turning around." Both of these chief symptoms, it should be noted, are visual.

Pope wrote:

There, screened in shades from day's detested glare,  
Spleen sighs forever on her pensive bed,  
Pain at her side and megrim at her head.

"The sole thing that brings me relief," still say many patients, "is absolute darkness."

In his "Physiology of Marriage," the Frenchman, Balzac, best fitted to give expression to the national opinion, gives a vivid picture of the disease as illustrated in upper-class families. It is always the wife who is afflicted. He pictures it as the queen of discases, the most pleasant and at the same time the most terrible weapon which a woman can use against the husband. "I have the migraine," ends all controversy. But while ridiculing the disease as a makeshift of these cunning ones to deceive, Balzac gives an admirable description of the attack, and lets us see that the assumed disease is certainly an imitation of the real, and perhaps the idea of trickery was read into the real experience by the husbands and the romancer. Her book, he says of the patient, is at her feet; the least noise is unbearable; her voice is weak; she silences her husband and all his reproaches with a look. The doctor is called in; he advises exercise, and madam recovers. But she gets her way, good or bad, and beats all plots or plans by means of her migraine—the protector of illicit loves and the confounder of virtuous husbands.

For a thousand years in Greece not even the fathers of medicine noticed that the aches of the head were not unilateral. Alexander of Tralles made one distinction, namely, that the stomach was implicated in some headaches. Even this was forgotten, and for another thousand years there was no observation that resulted in distinctions. Then began a luxury of growth in nomenclature which has increased, until to-day all that one can say is that "there are as many kinds of migraine as there are heads that suffer." Even a few years ago Nietzsche had to protest to his scientific physicians that his disease was not migraine, because it was not on one side of his head. The spell or hypnotism of a badly-formed, meaningless word thus continues to-day to dominate observation and facts. And all this despite the truth that so many physicians (being students)—Lepois, Airy, Parry, Dubois Reymond, Travers, Fothergill, etc.—were sufferers from the disease.

Anthropologists have pretty nearly come to an agreement that prehistoric and savage trephining, so general in all races and times, was probably done for the purpose of relieving headache. The location of the hole made in the savage skull, in order to let out the evil spirit, does not warrant the conclusion that the headache was particularly on one side. It may have been so, but the arrow-makers, basket-weavers, etc., in whom it probably chiefly occurred, were not so discriminating as to point it out to the medicine men. Both probably thought of the living cranium as a more or less hollow organ, such as they found it in their ancient dead. The Greeks, and after them the Romans, and then the medieval nations, thought of the headache as a hemicranous ache, although many patients, and most of them in the crisis of the attack, found the ache as much on one side as the other.

*Classification and Etiology.*—Sauvages gives ten forms: ocular, dental, sinus, coryzal, hemorrhoidal, hysterical, purulent, insectal, nephralgic and lunatic. The great French Dictionary of Medicine finds it best to limit the varieties to two chief classes, the simple and the constitutional. Many authors recognize, 1, the idiopathic; 2, the sympathetic (disease of the viscera); 3, the symptomatic, i. e., from lesions of the encephalon or its envelopes. In Parr's Dictionary (1809), cephalalgia is divided into:

1. The mild, i. e., cephalalgia.
2. The inveterate, or cephalæa.
3. The one-sided—hemicrania, migraine, etc.
4. In one temple, crotaphos.
5. In the crown, i. e., clavus hystericus.

But he says it may be symptomatic and idiopathic, adding that it is often impossible to ascertain the disease of which it is a symptom, and that in some it is unconnected with any other complaint.

The cause of migraine, if known, would dictate the classification. The fruitlessness and self-contradictions reached by all the classifications that have been devised shows only what is frankly confessed, that none has had the hint of a suspicion of the true etiology. The primitive trephiners of prehistoric and present-day savage times were as sure of their pathology as of their therapeutics. Aretæus described migraine under the name of "hæterocrania," and with considerable accuracy—better, in fact,

than Galen. Aurelianus finds that women are more subject to it than men. Serapion thought the disease sprang from the digestive organs.

Alexander Trallianus continued the great blunder that has reigned supreme almost to our own day, and still rules many minds, that in the symptom complex we now call sickheadache the stomach is primarily at fault.

Charles Lepois, 1618, taught that migraine was caused by fermentation of the biliary matter which distended the membranes of the brain. Thus began the fashion of using those sacred mumbo-jumbo words, "bile," "biliousness," "bilious headache," "liver," etc., which have been of such potent-impotent service in the literary and social history of the last 200 years.

Wepfer ascribed the disease to stagnation of the exudated blood serum in one half of the head. Theories as metaphysical ruled the minds of Hoffman, Willis, Fordyce and others, who credited the disease to animal spirits. Tissot, in 1813, returned to the gastric theory. De villiers and Deschamps attribute it to disease of the frontal sinus. No one could for long get far away from the ocular idea or location. Schönlein called the disease cephalic hysteria; its seat in the nerves of the forehead and temple. Romberg called it cerebral neuralgia. Chaussier and Pinel charged the disease to neuritis of the seventh and especially the fifth nerve. Professor Brouillard thought the third nerve was the sinner. Auzias-Turenne thought compression of the trigeminus in the cavernous sinus was the cause. Calmeil said that sickheadache was a double lesion; the flow of blood to the central and to the peripheral system. Piorry held it to be due to an ascending neuralgia, starting from the nerves of the iris and pathologically reflected from the sensitive centers to other organs. Charcot insists on an intimate relation with rheumatism, gout, hemorrhoids and gravel. Of 30 women with nodular joint affections, 12 had previously had intense migraine.

The number of primary or secondary causes of the disease that have been noted by physicians' reports is astonishing. In Dubois Reymond's own case the attacks usually followed fasting or lack of food, and many have alluded to this. On the other hand, scarcely less frequently it is caused by the presence of food. Fothergill, with a hundred others, is sure that diet, "the kind or quantity, or both," is at the root of the mischief. He

says that butter is the greatest cause, as "nothing more speedily and effectually gives the sickheadache, and sometimes within a few hours." The next most important articles are "melted butter, fat meats, spices, meat pies, hot buttered toast and malt liquors." English authors generally incline to the "bilious," gastric or intestinal cause of the disease. Fothergill's philosophy of the disease was that an acid or bitter bile in the empty stomach or duodenum, favored by certain foods, was the cause.

If fasting will not produce the disease, overeating will do it. Hunger and satiety are equally effective. Dubois Reymond, again, says his attacks were generally preceded by constipation. Wine, even sacramental wine, the least fragment of burnt pastry, are the great causes testified to by a physician as producing the attacks in himself for thirty years. The rôle of "biliousness," the "bile," "liver," "stomach," "dyspepsia," "disorder of the bowels," etc., is a big one in the great tragicomedy during the last several hundred years. Dr. Parry's own attacks were caused by the state of the stomach, "although they occurred without any feeling of indisposition at the time, either there or elsewhere. They generally *went off* with a movement in the stomach producing eructation." "Anything disagreeing with the stomach"—a hearty meal, meats, lack of meats, and every possible article of diet or lack of it—these *ad infinitum* have filled the accounts of patients and physicians. All of which is, of course, *post hoc* logic.

Perhaps next in emphasis and number of mentions after the digestional cause is the sexual. One physician has devoted a whole treatise to "catamenial megrim." Liveing at once stumbles on the fact that men have monthly attacks as well as women, but that does not deter him nor others from the hypnotism of coincidental and succedant disease viewed as cause. Puberty is a great disposer, but why it is so none can say, and the exceptions to the rule are far more numerous than the hits. The greatest reliance is placed on the supposed fact that the menopause brings cessation of migraine. Here, again, the inaccurate observation and domination of theory is noticed, because in the majority of cases the attacks increase in severity for ten or more years after the menopause, and in men the menopausal factor is hardly present and they also suffer up to about 60.

*Cephalalgia Spasmodica*, the Sick Headache, Parr describes in a separate paragraph, but his first sentence is, that he considers it separately only out of respect to Fothergill, for "this afflictive malady scarcely differs from the symptomatic head-ach, arising from the stomach."

Loud noises, foul air, smoke, drums, military music, review-days, etc., also, it seems determine attacks. But especially smelling, strong odors, particularly of drugs (turpentine, musk, valerian), even roses and flowers, are also effective. The smell of a postmortem room, of a hospital ward, always caused migraine in a great hospital physician, "one of the most brilliant writers," etc. He missed it but once, and that was when the wards had been watered with chlorinated water!

Meteorology is the great comfort of certain physicians in explaining migraine. In 1903 a great one has sought refuge in it when frightened by the ocular theory. Dr. LePois was attacked "on every change of the weather." Tissot and Labarraque are sure about atmospheric states, changes of season, or of weather. A large number of Symonds' patients blamed their attacks to weather, or no weather, to thunderstorms, etc. Dr. Airy's attacks were favored by windy weather—several of his family synchronously, and unknown to each other. Direction of the wind is another cause, frequent in Libert's cases. The southwesterly wind is effective at Zurich. Wagner, Nietzsche and others note the power of Föhn to cause the disease.

Mental excitement, emotion, vexation, distress, fright, passion, sexual emotion, etc., have been noted by Tissot, Symonds and many others as influential causes. "Nursing the mother through a long illness," "prolonged lactation," "poverty," "marriage ten years previously," frequent child-bearing, etc., are mentioned. On the other hand, freedom from the habitual attacks is noted during pregnancy.

Violent exertion, gymnastics, and just as frequently, fatigue, are charged with producing the disease. Lifting heavy weights, sudden effort, straining, running, a hard day's washing, skating, traveling, riding, are among other causes of the disease.

"Prolonged discharges," "prolonged indigestion," "disordered bowels," "impaired general health," "debility," "leucorrhea," are recorded observations. The cart

is before the horse often, and often there is no horse or no cart.

"The state of sleep, or rather, perhaps, of waking," also causes the attacks, according to Liveing. One wonders if the neither-waking-or-sleeping state would not also do the same. To wake up from sleep seems to have been a frequent cause, and to be awakened before time. Prolonged watching, resistance to sleep, etc., are also listed.

The thousand causes that have been given remind one of the symptoms of the homeopaths in the "proving" of their drugs. However foolish scientifically they are also pathetic and confessions of impotence in the face of a great mystery.

In Symonds' 90 cases the causes are thus classified:

Emotional disturbance.....	53
Indiscretions of diet.....	19
Denial of diet as cause.....	62
Action of the bowels.....	12
Denial of this cause.....	54
Fatigue .....	32
Catamenia (out of 76).....	35
Atmospheric states .....	48
Thunder .....	25

Analysis of these figures is both edifying and mystifying and amusing.

Dubois Reymond held to the theory of a tetanization of the cervical sympathetic, and the great modern French "Dictionnaire des Sciences Médicales" agrees that this is the best theory.

The bibliography of the subject would occupy a volume. The Index Catalogue and the Monographs of Liveing, Spitzer, Cornu and Möbius may be consulted for references. All text-books on general medicine and nervous diseases, of course, add to the literature, without adding any clarification of the subject.

Hooper's Medical Dictionary says migraine "arises from a state of the stomach," and Parr's Dictionary traces causes to bony fragments, exostoses, tumors, worms in the brain, etc. Parr finally breaks down, however, and in despair says: "Authors have endeavored to distinguish by the particular kinds of pain, which of these causes may have produced it, but language fails in describing the different feelings and their variety." One of the reasons for the despair of Parr and of all others is that the whole life of the patient was not observed. The clinic was of the day, not biographic. This disease is one of the whole life.

Airy and Förster think cerebral anemia is the cause. Sarda says: "How many dyspeptics have hemierania! How many migrainics have no dyspepsia?" Liveing's view is that the disease is of the nature of a nerve storm from the sensory centers, and is related to epilepsy.

As for definitions, one modern one may serve for many: "A complex neuralgia of the nervous centers, of the nerves of sensation and of vasomotor nerves, characterized by direct or reflex modifications of the intellect, of sensibility, and of local circulation, also of general circulation and of great functions." Almost all authors emphasize the rôle of "heredity"—"the unknown god ignorantly worshipped." Osler's summary is, "the nature of the disease is unknown."

In a general way all theories may be grouped into four large classes:

1. The cause is central. The authors upholding this view are Liveing, Romberg, Anstie, Leubuscher, Jackson, Gowers, Möbius and others.

2. The vasomotor system is at fault. The advocating authors, according to Spitzer, are Dubois Reymond, Möllendorf, Eulenberg, Mauthner, Siegrist, Oppenheim, Whytt, Latham, Lauder-Brunton, Hammond, Wilks, Pemberton, Peake, Handford, Charcot, Galezowski, Féré, Thomayer, Lyon, Antonelli, d'Astros, etc.

3. Toxins are the etiologic factors—held by Galen, Serapion, Brunton, Hecker, Haig, Navarre, Wallace, Claus, Rachford, Steckel, Strümpell, etc.

4. Reflexes are the causes, supported by Tissot, Hack, Schäffer, Schech, Sommerbrodt, Zien, Dobisch, Martin, Seguin, Greenwood, Terrien, etc.

Each one of these may be and are combined with either one, two or three of the others, until only the most patient of experts can distinguish the divisional distinctions. To all others confusion soon becomes ever worse confounded with each hour's study. When one has become migrainous with attempts even to understand the theories he will agree with Osler and others that the nature of the disease is unknown. "*Autant de tetes, autant de migraines!*"

*Prodromal Symptoms.*—The typical attack is said to be usually ushered in by pain over, in, behind or above one eye, or in one temple, or by vague symptoms of gastric malaise, anorexia, lassitude, sleeplessness, or, con-

versely, on reading or writing, with sleepiness. The prodromes that have been noted are many. With or without the pain in the forehead, eyes or temple (or in all three), scotoma scintillans may precede the attack, and a number of authors and many practitioners still think this is a necessary part or prodrome of "true migraine." (This symptom has itself been called "ophthalmic migraine.") But if this is so, we can then have migraine without unilateralism, without pain and without implication of the digestive organs, for I am sure that close observation of many clinical cases will demonstrate that the majority of attacks of sickheadache are not preceded by scotoma scintillans; and that in fully a half of cases of scotoma this symptom is followed by no headache or other symptom whatever.

I have scrutinized the facts in not less than a thousand private cases of typical sickheadache, and myself and assistant are sure that at least half do not have the prodrome. On the other hand, questioning all patients who have had this symptom, shows that the same proportion do not have any headache following. Until I secured a perfect correction of my own ametropia I had frequent attacks of scotoma scintillans—numbering several hundred in twenty-five years—and I never had a headache in my life. Hippus and hemianopsia are also other ocular prodromes.

*"The Typical Attack."*—The most common, and especially the initial symptom, is that supposed to be expressed by the name—a pain in one side of the head. This pain is almost always described as over one eye, in it, or behind it, or in one temple. One after another there are or may be additional symptoms until the whole encephalon becomes unendurably painful and sensitive, and nausea and indescribable wretchedness follows, violent emesis then ensues, lasting for a few minutes, or for days; there is then a sudden clearing, and, in otherwise healthy and strong natures, a quick return to health. The recovery may be slower in the weak or otherwise unhealthy. Despite the fact that the digestive disorder is a late or last and infrequent symptom of the disease the gastric origin is still the favorite theory today. But it must not be forgotten that the testimony of all writers agrees with that of personal clinical experience: the number of atypical cases is a hundred times greater than that of the so-called typical. The

so-called typical disease is the severe one, that in which there will be at least the two chief symptoms of headache and nausea. Hence the applicability of the term sickheadache to this condition. But, again, the vast majority of cases of what is evidently the same disease, do not reach the extreme of nausea or even of vomiting.

One may with truth say that there is no typical disease. The vast majority of cases have no aura. This pathologic house has no portico or front door. Almost as many cases have the aura only, without other symptoms. The house, then, consists solely of front door. Parkman and Spencer and others avoided what the writers would call migraine, by most careful and deft avoidance of the causes of it, and yet their disease was essentially the same as that of George Eliot and Nietzsche. Hemisrania is often not hemisrania, i. e., it is bilateral instead of unilateral. All pain in the head may be absent and the disease have the same cause as in headache cases. The digestional reflexes are in the great majority of cases entirely absent, or they may be of a hundred types. What shall, therefore, be said of a disease that has no true typical symptoms, which hardly ever has all of those called so, which usually has only one, which may consist solely of a prodrome, or without one of the usually recognized symptoms? It is time that it were reborn, renamed, rechristened and reeducated.

The recognition of the essential morbid condition is further rendered more difficult by the intermixture of an infinite variety of symptoms that often mask or complicate the clinical course, complaints and diagnosis beyond recognition. Thus has been completed the utter chaos which to-day characterizes the whole subject. There is no agreement among a multitude of theorists; there is the most ridiculous weedy growth of contradictions and inconsequence concerning etiology; and, of course, there is no therapeutics whatever. Migraine is the puzzle and the opprobrium of medicine. The conclusion of the article in the greatest medical encyclopedia is: *Autant de tetes autant de migraines*, which, translated into scientific language means that the almost unique cause of migraine, astigmatism, etc., differs in each case; the exciting cause, occupation and use at near-range of the eyes, differs no less; the soil, i. e., the nervous and digestive systems, into which this infinitely varying seed falls, are also never alike in two cases. How certain, therefore,

must it be that the morbid results are so lawless and seemingly illogical.

The terminal stages of the attacks also illustrate the death-and-life struggle of the organism with the excruciating disease. The one, two, or three-day vomiting and retching described in the cases of Mrs. Carlyle, Nietzsche, etc., is suggestive. There is sometimes a flow of tears, sometimes abundant secretion of urine, a mucous flux from the nose, lavish sweating of the feet, hands, or half of the face; there may be nose-bleeding or even arterial hemorrhage.

A large clinical experience with migrainous patients shows that their headaches are of an apparently amazing variety of kinds, and seemingly, of causes. An examination of the literature also illustrates the same fact, each of these kinds by one or by others being called or described as migrainous. The mere index or enumeration of these kinds of headache would fill many pages. In the first place there is a long list of headaches plainly due to organic and systemic diseases, such as tumor and traumatism of the brain, meningitis, fevers, infectious diseases, etc. These are, of course, excluded. They are few in number compared to the nonsymptomatic and functional cases, but in many treatises they fill most if not all of the field of vision. Of the functional kinds one may likewise construct a huge list: the nervous sick, periodic, hereditary, constitutional, dietary, hemi-cranic, menstrual, ocular, nasal, dental, constipational, bilious, indigestional; those from intellectual overwork, physical exhaustion, worry, lack of food, from study, bad light, bad ventilation; from coryza, influenza, rheumatism, uterine disease, pregnancy, hysteria, anemia, diseases of the spinal cord, of syphilis, and so on, and so on. And, finally, then, is a very large class that can not be ascribed even to the vaguest and most far-off cause. Any one, two or dozen of the kinds may be mixed in all proportions in any one case, and only omniscience—not possessed at least by young practitioners—could discern the explanation and dissolve the mystery.

Lastly, the location, character and degree of the ache in, about, on and below the head, in spots, in halves, or of the whole, make confusion worse confounded.

*The Eye and Migraine.*—For several thousand years the observation has been unconsciously persisted in that the cephalalgia is not a head-pain, but an eye-pain. Few or

none in any definite way noticed that it was produced by near-use of the eyes, and none that the various extensions to other parts and organs, the intensifications of the pain, and the masking under a hundred other protean disguises, were also products of continued and increased eyestrain. But there was never any failure of the necessity to notice the implication of the ocular factor. The most noteworthy after the eye-pain was, of course, scintillating scotoma. The seat of this strange disorder has been placed in every part of the visual apparatus from the retina to the ultimate of the visual center.<sup>1</sup> Piorry's theories of "monophthalmalgia" or "iralgia," or of an affection of peripheral nerves of the eye, was followed by Brewster's thought that the retina is the organ affected. Airy, Förster and Liveing placed it within the cranium, the latter, with Wollaston, locating it in the thalamus. Mauthner argues against the cortical localization. Dianoux thinks the source is in the optic nerve, the chiasm, the optic tracts or the geniculate bodies. Baralt returned to the retinal theory and Féré defended the cortical localization. Possibly the mixture of phosphene symptoms helped to create the diversity of opinions. It has also been noticed that the typical fortification spectra is of great variety; that often it is not colored or quivering, etc.; that it does not have any uniformity of location or appearance; and, finally, that it is often not a positive phenomenon at all, but merely a negative one—"aphose," "anopsia," "vision nulle," etc. There may be a failure to perceive the image in varying degrees, in various parts of the field, and for varying lapses of time. "Blind headaches" the patients speak of in such cases. Spitzer is in error when he says all scotomas are positive, the products of irritation. I have had many patients who, on being narrowly questioned, bear witness to the negativity of the visual difficulties. Neither is it always binocular, as he contends. Theory is abundantly contradicted by observation when he says that "the visual aura of migraine is an irritation symptom, a binocular homogeneous hemiscotoma." Siegrist contends for the purely negative character of all mi-

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1. This has been elevated into an independent disease, especially by Galezowski and Féré. Charcot, Airy, Latham, Listing, Förster, Mannhardt, Ruete, etc., have especially commended or emphasized the special treatment of this form of migraine. The results are naturally *nil*.

grainous scotomas, and believes they are of cortical origin. And such beyond question they are.

But wherever may be the location of these disturbances, they are visual in character. Thus what is recognized as the most frequent aura or initial symptom should have pointed to the visual function as the source of the mischief which it ushers in. In other diseases such a symptom dictates the location of the trephining of the skull. In migraine it is held as without suggestive value.

Some 300 years ago Lepois, in beginning the study of medicine, found that he was greatly afflicted with migraine. He endured the attacks for four years and then, as thousands have done since, he fled to Italy. With cessation of study and with the out-of-door life he led, he soon recovered, and thought himself rid of the disease. But when he went back to his home and literary work the attacks returned as bad as ever. He naturally sought an explanation of the mysterious affection, and found it to consist of a serous exudation produced by vomiting. Since his day the same persistent cause has inevitably produced the infinitely multiplied result, but to the fact all have been blind, and all have multiplied theories as misleading and groundless as that of Lepois. And yet medicine is said to be purely empiric. The cause has been ever before and in their eyes, and empiricism has failed. And yet medicine is said to be a science, although none has observed the simple fact always present that near-use of astigmatic eyes is absolutely required to produce migraine. In the last century arose a so-called "cure" for migraine or for suffering eyes, atropin in the eyes, when, rarely, the eyes happened to suffer in migrainous attacks. Nietzsche was put through this cure. It acted as successfully as the other prescriptions, "Italy," or "Switzerland," or "walking the moors." But the cure did not last. The patient's ills returned when the mydriatic or the "change of climate" had ended, and there was return to literary work. Later, Brewster reports three cases of cure that really cured. He credits it to atropin, but ends the report of each case with the incidental remark that glasses correcting the ametropia were also prescribed!

Migraine or hemicrania, when we inquire with accuracy either of the literature or of private patients,

is almost always not cranial in any common acceptation of the term, but is ocular. The fact that gave origin to the word is that not the skull, so much as the eyebrow, temple, eye and orbit, is the small portion where begins the headache, and whence with ingravescence, radiates or extends the disease to all parts of the head, the nervous and digestive symptoms. A large proportion of all so-called and recognized "ocular headaches," perhaps, have the same initial symptom and location. A great theory of the nature of the disease, *migraine*, was that of Piorry, which supposed that the neuralgia started from the nerves of the iris and was pathologically reflected from the cerebral sensitive center to other organs, from which reflex came all the symptoms and results of the subsequent disease. When the time and the state of medical science are considered, this showed a remarkably close observation and a near guess at the truth.

Other references to the eyes are, "anxiety about college examinations," "troublesome letter writing," "a rapid succession of visual impressions (in traveling) in upsetting the sensorium, and producing a vertiginous state allied to sea-sickness." Glaring lights, "sight-seeing," "an evening entertainment" have, of course, been noted. "Reading on a full stomach" caused the attacks in a great physician, and he could thus produce an attack instantly. Two young ladies always brought on the attacks by reading late at night. Incidence of strong light, a reflected light from snow, ice, a tablecloth, are also put as causes. In Dr. Airy's case the attacks generally came on "while the eyes are engaged with troublesome reading." It was so with Dr. Piorry, who could produce the disease experimentally "by strongly fixing the sight on reading." Looking at striped wall-paper, or a striped dress, a trellis, etc., are other causes, but it aroused no attention to astigmatism or the eyes in the physicians who chronicle the fact. Living's comments on these causes of the "nerve-storm" and the "habit" of *migraine* are most instructive—at least for us of to-day. Pity they were not more so to him. Living notes that dressmakers and others compelled to work far into the night, often for weeks together, complain of *migraine*. He does not fail to explain it by the "close and confined rooms."

It is set down that "mental exertion"—it is not called study—especially in lads at school and young

men at college often causes the first development, or at least the increase, of the malady. "Close application to books," "and those modern instruments of torture, competitive examinations," are emphasized—"especially if coupled with deficiency of out-door life." "The same thing," says Living, "happens in later years to literary and professional men," especially between 30 and 40 years of age. But "overwork and over-anxiety in business" are, in these cases, the causes. "Students' life and intellectual competition," not eyes, are the supposed factors. "In Mr. A.'s son the early strain of school life caused the 'day-nightmare,' which preceded his megrim, and his subsequent attacks of the latter complaint were always multiplied by close application and almost ceased with an out-door life. It was much the same, though commencing at a somewhat later period, with his father and uncle." Dubois Reymond found his own attacks subsided when he had leisure to stop severe intellectual work. In one of Living's cases, "a child of 9 had been overworking at school, and on returning home early with a headache, etc." Another boy was 13 or 14, and to overapplication at school was ascribed his attacks. Of thousands of boys the same might now be chronicled.

But among many other things pertaining to the eye the most striking and convincing demonstration of the ocular cause of migraine, and at the same time one of the most remarkable instances of scientific error, is that of Dr. Alexander Spitzer. In 1901 he published a most crude and critical monograph on the disease, the conclusion of which is that stenosis of the foramen of Munro is its unique and universal pathologic basis! This bizarre theory, the latest result of critical science, does not need a word to demonstrate its absurdity. One can only ask, why the inveterate disinclination to ignore the eye itself?

In his great work, Allbutt, like many others, notes that migraine is of exceptional frequency among those pursuing sedentary or in-door occupations, and rarely in those living an out-of-door life. The treatment is, therefore, advised to live much out of doors. But Allbutt and his departmental writer, Mackenzie, has no allusion whatever to eyes in the article.

In 1888, Dr. G. Martin (*Ann. d'oc.*, 1888, xcix, pp. 24 and '205), a French oculist, published an article

which some time will be recognized as truly epoch-making. But two writers, so far as I have noticed, have even mentioned Martin's magnificent and daring attempt to bring the medical world to its senses. One of these, Spitzer, passes Martin by with a one-word mention of his name. The second, Schmidt-Rimpler, himself also an oculist, scorns Martin's theory with genuine unscience.<sup>2</sup>

One day Martin happened to get one of the astigmatic lenses of his own spectacles reversed, or "hindsight-before," as patients often do, and he had a violent attack of sickheadache. This has frequently occurred with my patients, with the same sudden appearance of "the disease whose nature is unknown." Martin happened to possess the power of observation and to be a scientific scientist. From his own experience he was led to study that of his patients, and it was soon evident that their migraines were due to astigmatism, i. e., to partial and too continuous contraction of the ciliary muscle. When a single eye was astigmatic, and the other not so or less so, the pain (hemisideria) was over the astigmatic eye. With loss of one eye the bilateral migraine (if one may be excused the absurd term) became unilateral. When only one eye is used in vision, if it is the less astigmatic, the migraine is on that side. With cataract operations on both eyes the whole migrainous troubles disappear instantly, because there was then no function or malfunction of the ciliary muscle. (Surgeons and scientists should not, therefore, advise extraction!) Martin reports many cases of cure by spectacles correcting the ametropia. As to heredity, he counters capitally that the corneal abnormality (astigmatism) is as often hereditary as the incriminating diathesis. Of course, a headache can not be inherited, but only the anatomic, or other conditioning cause of headache.<sup>3</sup> The diathesis or constitutional factor determines whether existing astigma-

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2. This distinguished specialist rightly finds "glasses do not cure," because he fails to see that he has never prescribed proper glasses for his patients. The astigmatism, ametropia, etc., must be corrected in order to cure, and such correction is beneath the dignity of the German oculists. Patients so report and books and articles frankly confess the fact.

3. "A man bored a hole in a tree and a woodpecker came and lived in it. 'The tree has conceived' said the man, 'and has brought forth a bird.' Next year the woodpecker went away and two flying squirrels lived in the tree. 'What a curious thing,' said the man, 'is heredity.'"

tism will produce migraine, and just what its nature will be. Martin reports 352 cases. Low astigmatisms, of course, are the rule—just such as the inattentive European oculist frankly ignores and scorns. There were, for example, in one series: 66 cases with 0.25 D.; 121 cases with 0.50 D.; 77 cases with 0.75 D.; 18 cases with 1.00 D.; 2 cases with 1.25 D.; 1 case with 1.50 D.

In higher degrees, as we know, there is no attempt to neutralize the corneal asymmetry and so no reflex disease. Near-work occupation is renounced, study interdicted, the eyes ruined, or a criminal life confirmed, but there is no migraine.

The morbid science which made the profession utterly ignore the testimony of S. Weir Mitchell published thirty years ago, made it overlook Martin's most valuable and scientific contribution. The great mass of medical men smiled and passed on after the manner of the leaders who knew so much and yet who knew so little. But the quiet protests and reports of other oculists began to appear, especially in America, and better still, thousands of patients began to tell thousands of their friends that "glasses cured my sickheadache." The doctors kept on with that wonderful smile, but it is now becoming more concealed and if exposed to public view, more sneery and much more sickly. The professional leaders, the text-book makers, the monograph-writers, especially if of European origin or tradition, have the smile thoroughly out of sight. In fact, they never smiled. Their books know nothing of eyes. In our country the bookmakers, as a concession to popular superstition and in order to be on the safe side, and to show they do know about all this sort of thing, make a lofty allusion to the ocular factor and treatment, but in a given case in their office they would no more think of directing the patient to an oculist than to a corn-doctor. Osler goes so far as to say that many headaches are from eyestrain; that many of these are hemicranial; and that in migraine the eyes should be examined. Tyson barely alludes to eyestrain, Anders also notes it, but in treatment he ignores it. French and Monro say eyestrain is a cause. The "New International Encyclopedia," volume of 1903, gives eyestrain as one of the causes of migraine, but fails to mention the fact under treatment. At present, all over the United States, there are quiet, almost un-

known oculists who are curing thousands of patients of the afflictions described in the 14 historic instances of the two volumes called "Biographic Clinics." Hardly a week passes that noteworthy testimonies are not printed in medical journals by honorable oculists, that the eyes are a powerful factor in producing sickheadache and various morbid reflexes. Many other oculists do not publicly testify, and are afraid to acknowledge either their belief or the facts privately, for reasons which all consultants and referers of cases well know. There is an old disease called "Being between the devil and the deep sea." Thousands of American patients have learned that good refraction cures and prevents sickheadaches and many other miserable diseases. But their official medical advisers derisively smile that old-time, tired, sneery, sickly smile. The young and timid physicians, specialists or generalists—the great mass of the half-convinced or well-frightened—find themselves on a very narrow strip of an island or peninsula. On one side is water, deep, cold and far-reaching; on the other is what the polite little girl in her prayers called "the gentleman from hell."

*The Relation to Age, Sex and Occupation.*—From of old it has been noticed that migraine rarely appears before the age of puberty, and that with old age it disappears. But I am sure that it occurs more often in childhood than is supposed. Gowers goes so far as to say that one-third of all cases begin from the fifth to the tenth year. It all depends on the existence of ametropia and the amount of study, reading, etc., carried on. I have had a large number of school children afflicted with the malady in variant and typical forms. One little boy I particularly remember whose astigmatism for years increased about 0.5 D. every few months, was each time relieved of his intense vomiting by a change of glasses until the compensation of the higher astigmatism again became impossible. Puberty has nothing to do with the existence of the disease in either girls or boys. In the same way one of the superstitions of the ages appears in physicians' offices, both in patients and physicians, that with the menopause there is a sudden rising or exacerbation of many diseases, chief among which is migraine. The menopause has nothing whatever to do with this, which is wholly due to the increase of the ocular reflexes caused by presbyopia. The blunder should

long ago have been manifest to the crudest observation.

There is no causal relation between the sexual history and organs and migraine. The old observation that women are more subject to the disease than men is also explained by the fact that women have always in the past done more near-work with the eyes than men—sewing, house-life, cooking, weaving, reading, etc. Whenever men pursue such occupations the disease is proportionally as frequent, modified slightly by their greater neurologic and temperamental resisting power.

The books and monographs also speak of the great incidence of the affection among the upper classes, the liberal professions, men and women of letters, etc. As the French say, *La migraine est le mal des beaux esprits*. This means only that such people read and write more than others. I have never heard of a case of sickheadache among farmers, policemen, firemen, soldiers, ranchmen, trainmen, cattle dealers and drivers, sailors, etc. But among seamstresses, typewriters, typesetters, lathe-workers, watchmakers, book-keepers, copyists, sewing-machine girls, weavers, etc., the disease is as common as among students, literary workers, educated people, etc.

An amusing and long-drawn out correspondence and discussion occurred in one of the London papers in November and December, 1903, on "Brain-fag." Almost every line showed that "brain-fag" was caused by use of ametropic eyes, not by use of the intellect.

As to periodicity, when the life has been forced into regularity and routine, there is sometimes an approach to regularity of rhythm in the attacks. But in another case and in the same one if ocular rest is secured, even for a day, the return of the attack is replaced by health and happiness. The length of the attack may thus vary from a few hours to almost any number of days. The interim of freedom varies with each patient and with the ocular labor of each patient, from a day or two, to once in a lifetime.

*The Gastric Crisis.*—Inaccuracy of observation is shown in the descriptions of gastric symptoms by many writers. In the first place there should be a distinction drawn between nausea and vomiting. Many patients will have nausea only, not followed by actual vomiting, and it is the testimony of most patients that this nausea is far more agonizing than vomiting would be—that

emesis would bring relief. On the other hand, there is not seldom intense retching without any or but little vomitus. This is worse than either of the other two kinds of sickness. The difficulty of understanding what actually takes place in a given case is enhanced by the disinclination, especially in literature, of patients to state that actual vomiting took place. They use euphemisms, "malaise," "nausea," "sickness" and many indefinite or misleading terms. One's doubt is heightened by the difference in different countries, and even in one country in the significance of the word "sick" and "sickness." Many writers state that the gastric complication comes on and ends suddenly, and with the vomiting there is immediate return to the normal state of health. But constant retching and digestive misery sometimes persists for one, two, and even three days.

Then there is the failure to notice that the nausea and vomiting are but the latest and severest stages of the one disease, brought on by continuous application of the eyes, regardless of the prodromal and cephalgic warnings. Parkman, Huxley, Browning, Spencer, Carlyle, heeded the warnings and avoided the results; Nietzsche, Mrs. Carlyle, Margaret Fuller, George Eliot and Wagner did not heed, and their lives were tragedies. There is also wanting in reports the recognition of the striking fact that patients with the severe gastric disease, sickheadache, which produces vomiting, indigestion, anorexia and anemia, are able and are irresistibly compelled to walk five, ten or fifteen miles a day, or take some other form of exercise; and they are able to do it with ease and with the most manifest relief of all symptoms. In what other organic or severe stomachal disease is this possible?

*Colds, Rheumatism, and Gout.*—In private practice the careful and scrutinizing oculist finds that common colds and influenzas have a strange connection with eye-strain, and the relief of these conditions often follows the wearing of glasses. A misplaced or wrong lens strangely results in "a cold." In the cases studied in "Biographic Clinics," there are many confirmations of the fact. Mrs. Carlyle's "eight influenzas annually" is an instance, and all through the biographies of several of these cases colds and influenza are mysteriously present. It is exactly the same with rheumatism and gout. I have found no accident or cause ascribed for Parkman's

life-long arthritis. The accounts of Nietzsche's "rheumatism" and that of the other patients are likewise both mystifying and suggestive. Sir Henry Holland is the great advocate of the theory of the gouty origin of migraine. To excess of uric acid in the system he and many others ascribe the disease. Because migraine as an "independent disease" is in reality due to eyestrain, the only conclusion to be drawn is that eyestrain often causes gout, rheumatism, and the "uric acid diathesis." To that conclusion, medical science may sometime come.

*Pareses, Paralyzes, Anesthesias, etc.*, are most constant, frequently reported, and remarkably peculiar symptoms, concurrent or resultant, in the history of migraine. The following are the words of some of the reports: "The right arm becomes numb in the paroxysm, and in consequence so useless that she will let things drop from the hand." "Numbness and a sense of tingling (like that in a foot or hand 'asleep,' as we say, and 'pins and needles') commence in the fingers of the right hand and gradually extend up that arm and side, until the throat is reached. The interior of the throat, the tongue and lips seems to share in the sensation, which is no longer confined to the right side, but affects these parts bilaterally. The speech is next implicated." "It is utterly impossible for me to speak." "This disorder of speech is like that of some other highly educated patients." "An arm or a leg of the same side, one time one side and one another, go to sleep." "I feel a tingling as if ants were on them. I have the same feeling in the mouth and tongue, and, further, during this period, I have the greatest difficulty in speaking." Disorders of sensation and touch were present in 21 out of 60 cases in one series, sometimes alternating with disorders of sight. A distinguished physician, Travers, describes in his own case the numbness in fingers and tongue, so that touch and taste were muffled, etc. Piorry speaks of "painful thrilling," vibratory in nature, "uselessness of the hands," "transient hemiplegia." The description of Nietzsche's "rheumatism" creeping up the arm, etc., and others may be construed as the explanation of popular and permitted pathology. In private practice I have often noted these disorders of motility and sensation as dependent on eyestrain, and if, as I am convinced, migraine is caused by eyestrain, there can be but one conclusion of the matter. The overlooked little and con-

temptible cause, just as in daily life, is also the secret of pathology and practical medicine.

*Ocular Paralysis.*—Transient paralyzes and pareses of the ocular muscles are well-recognized effects in migrainous histories. "Of the internal rectus of the right," "partial of the oblique," ptosis, etc., are explained as inhibitory phenomena. Double vision, of course, is the result of these ocular paralyzes.

*Psychic Disorders,* not alone those naturally resulting from long and intense suffering, but such as temporarily and directly are the immediate consequences of the disease, are frequent in all the literature of migraine. Confusion of intellect, temporary loss of memory, inability to speak, or to speak intelligibly, embarrassment, etc., are frequent expressions. It is noteworthy that these are usually concurrent with anesthasias, paralyzes, pareses, etc. "Confused and tumultuous mental and emotional conditions" are the most frequent effects. Hallucination is rare. Professor Lebert's severe seizures began with "ineoherence of ideas and difficulty in finding words." "Strange and wandering in his mind;" "unable to collect his thoughts;" "mind affected;" "mentally incapacitated;" "whatever he read left no impression;" "disorder of ideation;" "double consciousness;" "the past and present confounded;" "feeling silly;" "losing their senses;" "confusion in the head;" "uneasiness;" "irritability;" "mental incapacity;" "sick-giddiness;" "vertigo;" "determinations of blood to the head;" "threatened apoplexy;" "tumultuary disorder," etc., are a few of the hundreds of expressions that might be gathered in the literature. The description given by Crichton (Vol. I, p. 237) of the case of Dr. Spalding of Berlin is most suggestive. When the patient tried to write he was unable either to think or to make sensible sentences. A multitude of excerpts might be gathered from literary history bearing witness to the same mental paralysis. Parkman's "stirred-up head" when he wrote a few minutes told him to stop; Wagner, Nietzsche, and indeed all eyestrain sufferers had the same or similar disorders.

But the profoundest evil is the dejection and disgust with life that follows persistent use of astigmatic eyes. It is noticed in all the best literature of migraine, ill humor, petulance, morbid introspection, irritability, proceed to melancholy and pessimism in the extreme cases.

"Inexpressible fear" is recorded by Dr. Reynolds; "vague dread," "a sense of apprehension and insecurity," "dread," "apprehension," "something about to happen," "shuddering at the thought of an attack," "horror," are some of many expressions that have been recorded. Sir John Forbes says: "There seems to be some peculiarity in the pain, whatever be its degree, unlike the pains of other parts of the body, and as if it were combined with something of a mental quality. There is a feeling and a fear of impending death, and the primary symptoms of corporeal disorder, etc." This intellectual disorder and morbidity of the emotions is painfully evident in many great literary men who suffered from migraine or from eyestrain. In Parkman it was so evident, and yet so under control, that his friends, not himself, and the greatest physicians believed in his insanity. Wagner was also thought to be insane by physicians who knew nothing of migraine and less of eyestrain. Two of Nietzsche's oculists recognized the ocular origin of his malady, but that did not prevent the terrible tragedy of his paralysis. Even Professor Möbius, in 1903, says that "myopia can not produce migraine;" and this great clinician has not heard of astigmatism, or if he has heard of it, cares nothing for it. And if he cared much for it, he could not, in all Germany, get it corrected in his patients. Wagner resolved to commit suicide many times, when driven to desperation by his awful suffering. The effect of this mental torture and gloom in great literary workers is the almost single cause of the "literary pessimism" in an age of rugged vigor, luxury and national expansion.

The lessening of the amount of literary work that would otherwise have been done is exactly in proportion to the severity of the reflexes, or in the skill whereby they are avoided. In private practice one finds whole lives made futile, painful and invalid. Doctors are consulted, travel undertaken, spas visited, hydropathy pursued, quackery multiplied, patent medicines guzzled, narcomania encouraged, alcoholism made chronic. In biography one sees literary labor avoided, made impossible, reduced to an hour or two a day or to a life average of production of a few lines a day. To avoid this Parkman is compelled to write his own name by means of his gridiron, and Nietzsche is paralyzed at 44. Moreover, the literary work done

is abnormal in character and is produced "in a white heat," the "nerves ablaze," in "a shivering precipitancy," etc., as Wagner, Nietzsche, Carlyle and others testify.

*Treatment.*—The chapters on the treatment of migraine are longer than that famous one concerning snakes in Ireland, but are less convincing and satisfactory. The systematic books and articles give pages of drugs to be tried. The profession at one time settled down to hydropathy and diet, until the amusing and yet warning resultlessness lessened the enthusiasm. And then the quacks took up these scientific methods. How both treated the 14 sufferers of "Biographic Clinics" may be read in those volumes. The present-day treatment of such patients is as ineffective and scarcely less irrational than in the time of Parr, who advises:

1. Keep the bowels open, i. e., give cathartics, purges, etc.

2. Drain from the head, by a perpetual blister on vertex, etc.

3. Emetics. "The tyro, without a suspicion of the difficulty, by the exhibition of an emetic has succeeded."

4. The fetid gums, especially if "joined with aloes."

5. Camphor, nitre.

6. He advises against the too common practice of cutting off the hair, because it is supposed to keep the head warm, and also in order that cold applications may be more conveniently applied. The author himself says that he long had headaches and that they returned frequently after shaving the head, and after he let the hair grow he suffered less in violence, frequency and duration of his paroxysms. (When Parr published his dictionary he was 59 years old!)

7. Bleedings, leeches, cupping-glasses, opening the temporal artery, diet, etc.

8. The suppression of the hemorrhoidal discharge. Parr doesn't believe much in this, but says that "in the whole circle of practical medicine no question is so difficultly explained as the connection of the hemorrhoidal discharge with the general health; or, rather, the supposed connection as stated by the German physicians. The experience of ages must not be overlooked. The hemorrhoids were considered at a certain period of

life as essential to the male as the catamenia to the female."

9. Mental causes, anxiety, etc., are to be lessened.

*Sequels of Migraine.*—Martin and others have noticed that migraine often ends in a period of herpetism. One is reminded of Wagner's life-long and inexplicable attacks of "erysipelas." Blanching of the hair has been noticed. The disappearance of migraine, says the "Dictionnaire des Sciences Médicales," is often followed by gout, asthma, hemorrhoids and cutaneous affections. Trousseau says the same of gout. Tissot, Wepfer, Schobelt, Laurent, Percy, etc., cite cases in which migraine disappeared and was at once replaced by an unconquerable diarrhea, to which the original disease was preferred. The relation to hemorrhoids noticed by Parr gives a glimpse into clinical medicine, at least of the middle and later ages, which seems to have been overlooked or outlived in our time.

*Use of the Eyes at Near-range is the Cause of Migraine.*—I have never had or read of a case of migraine or of sickheadache in which it was not strikingly manifest that near-use of the eyes was the cause of the disease. Fifty pages of quotations from Nietzsche, Wagner, George Eliot, etc., could easily be gathered testifying with amazing unanimity and intensity to this fact.<sup>4</sup> The records of private cases show the same thing. In the extreme cases, and especially during the ages from 40 to 60 years, this inability to write and read reaches such a height that it is possible only for an hour or two or a few minutes a day, and then only with cries of pain. Letters are replaced by postal cards, near-work with the eyes is renounced, and a trip is taken, wet-packs endured, walking or mountain climbing begun, etc. To such a degree was this recognized, both by patient and physician, that it became in the last few centuries an established practice to spend most of one's time in "walking the moors," journeys to Switzerland or Italy, trips to the seashore, etc. "A change of climate" became the universal pre-

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4. The cephalalgia of students, says Parr, is often a nervous affection merely. "Whatever be the action of the nervous fibers in intellectual operations its excess is often a cause of pain; though, in many instances, the cephalalgia of students is connected with obstruction of the bowels, and very often with increased determination to the head."

scription for all "brain-workers" who had symptoms of "brain-fag" or of "migraine." The great vogue of hydropathy arose largely from the suffering that followed near-use of the eyes, and spas, cures, mineral springs, health resorts of a hundred kinds and in a hundred places sprang up largely to meet the demand for ocular rest and the relief of other ills that came with it.<sup>5</sup> The world and the profession ascribed the cures to the stopping of intellectual work, and to the waters, packs, mountains and sunshine. But the ills returned always when the eyes were used. Thousands of other persons used brain and eyes without these ills, that made no difference in faulty observation, and the domination of theory and preconception.

Almost all observers find it impossible to draw any distinction between headache and megrim. What causes one causes the other. What cures one cures the other. As a matter of theory, they draw fine and infinite distinctions between the two, but they are terribly puzzled, contradictory and self-contradictory when it comes to observation of cases and to treatment.<sup>6</sup> The lighter forms of migraine, the unclassifiable thousand types of headaches and "masked migraine" are, says a later writer, "essentially of the same stock—merely feebly developed forms or the vanishing inheritance of previous generations." To such a pass have the theorists come! Driven by desperation and a sound observational instinct, the excellent Liveing, after excluding certain types, justly and rightly, crowds them all into "one independent affection, constituting a malady *per se*—all varieties of migraine."

Liveing is right in finding the riotous multiplicity of symptoms classed under headache, sickheadache, etc., to be the expression of one independent morbidity or malady *per se*, erroneously called migraine or the megrims. But Liveing, as well as every other writer on the subject (except Martin), missed the open secret. The appalling mystery of thousands of years, especially

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5. This cause has been operative, one may believe, in establishing the English custom of country houses and homes.

6. An old astute observer wrote: "It may be doubted whether causes do not sometimes produce pain in the head, which are still less easily traced. . . . On a review of these causes of idiopathic headache we must regret that the source of so few cases is discoverable and that we have scarcely appropriate remedies for any of those which we can ascertain."

of the last 300, the explanation of the one disease whose cause and nature and cure are unknown, is now clear to all who wish to know, and whose minds are capable of receiving the truth. Migraine, in its so-called typical or in its multitude of atypical forms, is but one of the manifestations and results of eyestrain. Eyestrain produces almost an infinity of morbid results, and migraine, typical or not, is, if not absolutely, almost always, one of the products of the malfunction of astigmatic eyes. Any one can test the theory who wishes. The disease may be caused experimentally (on the skeptics, if they will!) by wrong glasses or by maladjusted right glasses. It may be cured by lenses correcting the astigmatism on which the disease depends.<sup>7</sup> The profession has for many years scorned the truth, until now the patients themselves are fast becoming aware of it without the doctor's advice. For many years to come they will probably have to teach physicians the etiology and therapeutics of their ailment.

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7. Very rarely it is not curable, as in the cases of George Eliot and Lewes, because a life of suffering has killed all reaction even when the cause is extinguished. In the young it is always curable—if the careful and scientific oculist is found.

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